

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of Claims in this application:

Listing of Claims:

Claims 1–25 (canceled).

Claim 26 (new). A catheter comprising:

- a flexible tube, said flexible tube having a proximal end, said flexible tube having a distal end;

- a working head, said working head having a proximal end, said working head having a distal end, said proximal end of said working head being connected to said distal end of said tube;

- said working head having a cylindrical bore open from said proximal end of said working head, said working head having an end wall capping said cylindrical bore at said distal end of said working head;

- a guide wire extending through said tube and through said cylindrical bore, and said guide wire extending out of a hole in said end wall of said working head;

- a flexible transport screw extending from said proximal end of said tube through said tube to said distal end of said working head, said flexible transport screw provided with helically extending transport surfaces;

- said flexible transport screw connected to a rotary drive configured to rotate said flexible transport screw;

said flexible transport screw having a proximal end, and said flexible transport screw having a distal end configured to rotate relative to said end wall, wherein said distal end abuts said end wall;

said flexible transport screw having a distal part disposed in said cylindrical bore, said flexible transport screw distal part forming a helix, said helix having an external diameter fitting the diameter of said cylindrical bore to rotate therein in contact therewith;

said flexible transport screw distal part having sharp edges;

a first lateral opening in said working head, said first lateral opening having internal edges in contact with said flexible transport screw distal part edges to shear and comminute material;

said flexible tube distal end having a proximate flexible tube distal end portion, said flexible tube distal end portion including a helical spring, said helical spring encased in a thin-walled plastic sheath; and,

said flexible tube distal end portion is connected to a recess in said working head proximal end.

Claim 27 (new). The catheter as claimed in claim 26, wherein:

said helix external diameter exactly fits said cylindrical bore's diameter to permit only minimal diameter play.

Claim 28 (new). A catheter as claimed in claim 26, further comprising:

said working head has an external surface, and said working head external surface tapers at said working head distal end.

Claim 29 (new). The catheter as claimed in claim 26, wherein:

said first lateral opening internal edges are sharp.

Claim 30 (new). A catheter as claimed in claim 26, further comprising:

said working head has an external surface;

said first lateral opening has external edges at said external surface; and,

said external edges are rounded.

Claim 31 (new). The catheter as claimed in claim 26, wherein:

said lateral opening is a slot.

Claim 32 (new). The catheter as claimed in claim 31, wherein:

said slot runs at least partially in an axial direction of said working head.

Claim 33 (new). The catheter as claimed in claim 31, wherein:

said slot is formed at least partly along a helix relative to a longitudinal axis of said working head.

Claim 34 (new). The catheter as claimed in claim 31, wherein:

said slot has width decreasing towards a proximal end of said working head.

Claim 35 (new). The catheter as claimed in claim 31, wherein:

said slot is formed in an L-shape.

Claim 36 (new). A catheter as claimed in claim 26, further comprising:

said working head has a distal end region proximate to said working head distal end;

said working head has an external surface;

a groove-like bottomed recess in said working head external surface, said groove-like recess extending from said working head distal end region to open into said lateral opening.

Claim 37 (new). The catheter as claimed in claim 36, wherein:

depth of said groove-like bottomed recess increases in the direction from said working head distal end to said working head proximal end.

Claim 38 (new). The catheter as claimed in claim 36, wherein:

a width of said groove-like bottomed recess is greater than a chord of an internal diameter of said working head.

Claim 39 (new). The catheter as claimed in claim 36, wherein:

said slot is formed at least partly along a helix relative to a longitudinal axis of said working head.

Claim 40 (new). The catheter as claimed in claim 26, wherein:

the connection between said flexible tube distal end portion and said recess in said working head proximal end resists tension and pressure.

Claim 41 (new). A catheter as claimed in claim 26, further comprising:

at least one tube reinforcement in said flexible tube.

Claim 42 (new). The catheter as claimed in claim 41, wherein:

said tube reinforcement is a metallic helix.

Claim 43 (new). The catheter as claimed in claim 41, wherein:

said tube reinforcement is arranged on an inside of said tube.

Claim 44 (new). The catheter as claimed in claim 26, wherein:

said working head is made of metal.

Claim 45 (new). The catheter as claimed in claim 26, wherein:

said flexible transport screw is made of metal.

Claim 46 (new). The catheter as claimed in claim 26, wherein:

said working head includes ceramic material.

Claim 47 (new). A catheter comprising:

a flexible tube, said flexible tube having a proximal end, said flexible tube having a distal end;

a working head, said working head having a proximal end, said working head having a distal end, said proximal end of said working head being connected to said distal end of said tube;

said working head having a cylindrical bore open from said proximal end of said working head, said working head having an end wall capping said cylindrical bore at said distal end of said working head;

a guide wire extending through said tube and through said cylindrical bore, and said guide wire extending out of a hole in said end wall of said working head;

a flexible transport screw extending from said proximal end of said tube through said tube to said distal end of said working head, said flexible transport screw provided with helically extending transport surfaces;

said flexible transport screw connected to a rotary drive configured to rotate said flexible transport screw;

said flexible transport screw having a proximal end, and said flexible transport screw having a distal end configured to rotate relative to said end wall, wherein said distal end abuts said end wall;

said flexible transport screw having a distal part disposed in said cylindrical bore, said flexible transport screw distal part forming a helix, said helix having an external diameter fitting the diameter of said cylindrical bore to rotate therein in contact therewith;

said flexible transport screw distal part having sharp edges;

a first lateral opening in said working head, said first lateral opening having internal edges in contact with said flexible transport screw distal part edges to shear and comminute material, said helical transport surfaces removing material in a direction towards the proximal end of said tube;

said flexible tube distal end having a proximate flexible tube distal end portion, said flexible tube distal end portion including a helical spring, said helical spring encased in a thin-walled plastic sheath; and,

said flexible tube distal end portion is connected to a recess in said working head proximal end.

Claim 48 (new). A catheter comprising:

a flexible tube, said flexible tube having a proximal end, said flexible tube having a distal end;

a working head, said working head having a proximal end, said working head having a distal end, said proximal end of said working head being connected to said distal end of said tube;

said working head having a cylindrical bore open from said proximal end of said working head, said working head having an end wall capping said cylindrical bore at said distal end of said working head;

a guide wire extending through said tube and through said cylindrical bore, and said guide wire extending out of a hole in said end wall of said working head;

a flexible transport screw extending from said proximal end of said tube through said tube to said distal end of said working head, said flexible transport screw provided with helically extending transport surfaces;

said flexible transport screw connected to a rotary drive configured to rotate said flexible transport screw;

said flexible transport screw having a proximal end, and said flexible transport screw having a distal end configured to rotate relative to said end wall, wherein said distal end abuts said end wall;

said flexible transport screw having a distal part disposed in said cylindrical bore, said flexible transport screw distal part forming a helix, said helix having an external diameter fitting the diameter of said cylindrical bore to rotate therein in contact therewith;

said flexible transport screw distal part having sharp edges;

a first lateral opening in said working head, said first lateral opening forming an L-shaped slot, said slot having a first limb extending substantially in a longitudinal direction and said slot having a second limb extending along a part of a circumference, said first lateral opening having internal edges in contact with said flexible transport screw distal part edges to shear and comminute material;

said flexible tube distal end having a proximate flexible tube distal end portion, said flexible tube distal end portion including a helical spring, said helical spring encased in a thin-walled plastic sheath; and,

said flexible tube distal end portion is connected to a recess in said working head proximal end.

Claim 49 (new). The catheter as claimed in claim 48, wherein:

a ratio of a width of the first limb extending in the longitudinal direction to a width of the second limb extending along a part of a circumference is from 1.0 to 1.3.